

Reply filed July 22, 2005

Response to Final Office Action of March 22, 2005

Application No.: 10/029,144

Docket No.: 2658-0275P

REMARKS

The applicants thank the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this amendment.

Entry Of Reply

Entry of this Reply under 37 C.F.R. §1.116 is respectfully requested because it places the application in condition for allowance. Alternately, entry is requested because it places the application in better form for appeal.

Status Of The Claims

Claims 1, 3, 5-13 and 15-23 are pending in the application.

Rejections Under 35 U.S.C. § 103(a) based On Lyu

Claims 1, 3, 6-13 and 15-18 and 20-23 are rejected under 35 U.S.C. § 103(a) as being obvious over the Lyu (U.S. Patent 6,001,539) in view of Tran (U.S. Patent 5,135,581), Carter (U.S. Patent 5,628, 933) and Kaneko (U.S. Patent 6,433,842). The Examiner adds the teachings of Kaiju (U.S. Patent 5,972,527) to the aforesaid rejection to reject claims 5 and 19. Applicants respectfully traverse.

Distinctions of the invention over Lyu, Tran, Carter, Kaneko and Kaiju have been placed before the Examiner and made of record in the application in previous responses. For brevity, these distinctions are not fully repeated here.

The Present Invention And Its Advantages

The present invention pertains to a process for forming a pixel electrode in a liquid crystal display where the pixel electrode has an amorphous structure. This amorphous structure is attained by utilizing hydrogen-containing gas in a novel temperature control environment such as is typically set forth in claim 1, where "the pixel electrode is formed by placing the substrate in a vacuum chamber and injecting hydrogen-containing gas at a temperature of less than about 400 °C, wherein the substrate has a temperature of less than about 200 °C when forming the pixel electrode, and the pixel electrode has an amorphous structure." See also independent claim 13.

Another novel embodiment of the invention is set forth in independent claim 22, where "the pixel electrode is formed by placing the substrate in a vacuum chamber and injecting hydrogen-containing gas at a temperature of less than about 400 °C, and the substrate has a temperature of less than about 200 °C when forming the pixel electrode, the temperature of the substrate corresponding to half a set temperature of the vacuum chamber, and

the pixel electrode has an amorphous structure.” *See also* independent claim 23.

Distinctions Of The Invention Over The Cited Art

The failures of the cited art in suggesting the claimed invention have been discussed in previous responses.

Regarding Lyu, Lyu fails to disclose forming an amorphous pixel electrode. Lyu additionally fails to disclose the temperature conditions of forming the pixel electrode. The Examiner again admits to the failings of Lyu at page 2, line 24 to page 3, line 4 of the Office Action.

The Examiner then turns to Tran to address the deficiencies of Lyu. However, Tran fails to teach or suggest using a hydrogen-containing gas instead of O₂ to thus teach away from the invention. Tran also fails to teach anything about the temperature of the substrate. Tran additionally fails to teach anything about the temperature differential of the substrate. Tran further fails to teach or suggest that the substrate is about half of the 400 °C set point of the vacuum chamber.

The Examiner also turns to Carter. However, Carter fails to disclose or suggest the present invention’s claimed relationship between the substrate temperature and the temperature of the injected hydrogen-containing gas (see claims 1 and 13). Carter also fails to disclose or suggest the temperature of the substrate being half the set point (see claims 22 and 23).

As a result, the combination of Lyu, Tran and Carter would fail to motivate one having ordinary skill in the art to produce the invention having an amorphous pixel of claims 1, 13, 22 and 23. A *prima facie* case of obviousness has thus not been made. Claims depending upon claims 1 and 13 are also patentable for at least the above reasons.

The Examiner also turns to Kaneko for teachings pertaining to the utilization of amorphous ITO or IZO, which allows for use of a weak-acid etchant. However, Kaneko fails to address the inability of Lyu, Tran and Carter (if they could be combined) to suggest the temperature differential between the substrate and the set point of the temperature of the vacuum deposition. A *prima facie* case of obviousness has thus not been made over Lyu, Tran, Carter, Suzuki and Kaneko.

The Examiner also uses Kaijou to reject the 50-150°C substrate temperature embodied in claims 5 and 19 of the invention. However, Kaiju fails to address the inability of Lyu, Tran, Carter and Kaneko (if they could be combined) to suggest the temperature differential between the substrate and the injected hydrogen-containing gas, or the relationship between the set point and the substrate. A *prima facie* case of obviousness has thus not been made over Lyu, Tran, Carter, Kaneko and Kaiju.

Additionally, the Examiner is now using up to five references in making rejections, which infers impermissible hindsight reconstruction.

“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (CAFC 1999). *See also In re Kotzab*, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316 (CAFC 2000). “Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight.” *Dembiczak* at 50 USPQ2d 1617. “The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.” *Dembiczak* at 50 USPQ2d 1617. “The patent examination process centers on prior art and the examination thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness . . . The factual inquiry must be thorough and searching. It must be based on objective evidence of record.” *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-44 (Fed. Cir. 2002).

Nonetheless, in the Response to Arguments at page 8 of the Office Action, the Examiner refutes the patentability of the invention:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., The claims described that the temperature of the substrate is less than about 200°C, and the temperature of injecting hydrogen-containing gas in a vacuum chamber is less than 400°C. Such that the claims to not definitely describe that the temperature of substrate is about 200°C and the temperature of the vacuum chamber is set point of 400°C) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims (*citation omitted*).

However, these narrow limitations posited by the Examiner need not be read into the claims for the claims to be patentable. The prior art fails to suggest not only the temperatures of 200°C and 400°C, but the also the claimed temperature limit: "injecting hydrogen-containing gas at a temperature of less than about 400 °C, wherein the substrate has a temperature of less than about 200 °C when forming the pixel electrode." (claims 1, 13, 22 and 23).

At most, Carter allows a substrate to cool from 250 °C to room temperature (which is less than 200 °C), but this teaching (along with any combination of the cited art) fails to disclose 200 °C or the relationship between the less than 400 °C/less than 200 °C temperature differential).

That is, the cited art references fail to teach or suggest the invention as a whole.

Because the rejection is based on 35 USC §103, what is in issue in such a rejection is "the invention as a whole", not just a few features of the claimed invention. Under 35 U.S.C. §103, " [a] patent may not be obtained . . . if the

differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under §103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. See *In re O'Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. See *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 USC 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. See, *In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *Uniroyal Inc. v. F-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488

U.S. 825 (1988); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986); *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” *C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references,

standing alone, are not "evidence." See *In re Dembiczak*, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

In this case, the Examiner has utterly failed to show how the prior art as a whole suggests the relationship between the hydrogen gas of less than 400 °C/less than 200 °C of the substrate temperature differential.

Therefore, the combination of Lyu, Tran, Carter and Kaneko would fail to motivate one having ordinary skill in the art to produce the invention having an amorphous pixel of claims 1, 13, 22 and 23. Kaiju fails to address these deficiencies. A *prima facie* case of obviousness has thus not been made. Claims depending upon claims 1 and 13 are patentable for at least the above reasons.

These rejections are overcome and withdrawal thereof is respectfully requested.

Prior Art Made Of Record And Not Utilized By The Examiner

The prior art made of record in the application and not utilized by the Examiner shows the status of the conventional art which the invention supercedes. Accordingly, no further remarks are necessary.

Conclusion

The Examiner's rejections have been overcome. No issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No.42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$120.00 is attached hereto.

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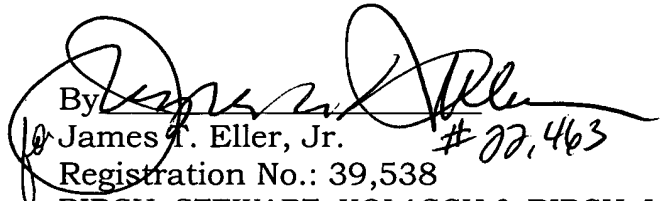
Docket No.: 2658-0275P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,



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